Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Please cancel claims 1-4.

1.   (cancelled)

2.   (cancelled)

3.   (cancelled)

4.   (cancelled)

5.   (currently amended)   ~~The caching device in claim 4 in which~~ A caching device using an N-way replacement mechanism comprising:

at least one replacement order list with N positions, the at least one replacement order list arranged with a first-to-replace position at one end and a last-to-replace position at the opposite end, each position containing a way number, N way comparators, a control unit, a replacement order generator, and receiving a hit signal and, in case of a hit, a hit way number;

a hit position in which the at least one replacement order list is determined by comparing the hit way number with the way number in each of the N positions in the at least one replacement order list using the N way comparators;

a control unit which produces replacement order generator control signals using the hit signal and the hit position;

a replacement order generator which comprises a replace way selector producing a replace way number and N position selectors, each consisting of a multiplexor with at least two inputs; and

the position selector for the last-to-replace position which has the hit way number and the replace way number as inputs and the position selectors for the other positions which have its own way number and a replace-later adjacent way number from its adjacent position toward the last-to-replace position as inputs.

6.   (original)   The caching device in claim 5 in which the control unit generates the replacement order generator control signals to have the position selector for the last-to-replace position choose the hit way number, the position selectors from the hit position to the position next to the last-to-replace position choose the replace-later adjacent way number, and the position selectors for the remaining positions choose its own way number.

7.   (original)   The caching device in claim 5 in which the control unit generates the replacement order generator control signals to have the position selector for the last-to-replace position choose the replace way number and position selectors for all other positions choose the replace-later adjacent way number.

8.   (original)   The caching device in claim 5 in which the replace way selector always chooses the way number from the first-to-replace position in the at least one replacement order list.

9.   (original)   The caching device in claim 5 in which the control unit generates the replacement order generator control signals to have the replace way selector choose the way number from at least one position in the at least one replacement order list.

10.   (currently amended)   ~~The caching device in claim 4~~ A caching device using an N-way replacement mechanism comprising:

at least one replacement order list with N positions, the at least one replacement order list arranged with a first-to-replace position at one end and a last-to-replace position at the opposite end, each position containing a way number, N way comparators, a control unit, in which the at least one replacement order list is divided into one or more partitions with each partition arranged with the first-to-replace position at one end and the last-to-replace position at the opposite end of the partition, and the control unit receiving a reference ID indicating a reference partition, a replacement order generator, and receiving a hit signal and, in case of a hit, a hit way number;

a hit position in which the at least one replacement order list is determined by comparing the hit way number with the way number in each of the N positions in the at least one replacement order list using the N way comparators;

a control unit which produces replacement order generator control signals using the hit signal and the hit position; and

a replacement order generator which comprises a replace way selector producing a replace way number and N position selectors, each consisting of a multiplexor with at least two inputs.

11.   (original)   The caching device in claim 10 in which the reference ID is an N-bit mask, each bit denoting whether or not the associated position is in the reference partition.

12.   (original)   The caching device in claim 10 in which the reference ID is a user identifier, identifying the partition information associated with the reference partition kept in the control unit.

13.   (original)   The caching device in claim 11 or claim 12 in which the position selector for the last-to-replace position of the at least one replacement order list has the hit way number, the replace way number and its own way number as inputs, the position selector for the first-to-replace position of the at least one replacement order list has the replace way number, its own way number and the replace-later adjacent way number as inputs, and the position selector for the remaining positions has the hit way number, the replace way number, its own way number, and the replace-later adjacent way number as inputs.

14.   (original)   The caching device in claim 13 in which the control unit generates the replacement order generator control signals to have the position selector for the last-to-replace position in the reference partition choose the hit way number, the position selectors from the hit

position to the position next to the last-to-replace position in the reference partition choose the replace-later adjacent way number, and the position selectors for the remaining positions within and outside the reference partition choose its own way number.

15.   (original)   The caching device in claim 13 in which the control unit generates the replacement order generator control signals to have the position selector for the last-to-replace position in the reference partition choose the replace way number, the position selectors for all other positions within the reference partition choose the replace-later adjacent way number, and the position selectors for positions outside the reference partition choose its own way number.

16.   (original)   The caching device in claim 13 in which the control unit generates the replacement order generator control signals to have the position selector for the last-to-replace position in the reference partition choose the hit way number, the position selectors for all other positions within the reference partition choose the replace-later adjacent way number, the position selector for the hit position choose the replace way number, and all other positions outside the reference partition choose its own way number.

17.   (original)   The caching device in claim 13 in which the control unit generates the replacement order generator order signals to have the replace way selector choose the way number from the first-to-replace position in the reference partition.

18. (original) The caching device in claim 13 in which the control unit generates the replacement order generator control signals to have the replace way selector choose the way number from at least one position in the at least one replacement order list.

19. (original) The caching device in claim 11 or claim 12 in which a user has access to at least two disjoint partitions, the partitions arranged with the first-to-replace partition toward the first-to-replace position of the at least one replacement order list and the last-to-replace partition toward the last-to-replace position of the at least one replacement order list, and the reference ID indicating the at least two disjoint reference partitions.

20. (original) The caching device in claim 19 in which the replacement order generator consists of a replace way selector, N position selectors, and a boundary way selector for each of the partition that is not the first-to-replace partition, each boundary way selector choosing the first-to-replace way number in its partition as the boundary way number.

21. (original) The caching device in claim 20 in which at least one of the at least two disjoint partitions is accessible by another user.

22. (original) The caching device in claim 20 or 21 in which the position selector for the last-to-replace position of the at least one replacement order list has the hit way number, the replace way number and its own way number as inputs, the position selector for the first-to-replace position of the at least one replacement order list has the replace way number, its own way number,

the replace-later adjacent way number, and the at least one boundary way number as inputs, and the position selector for the remaining positions has the hit way number, the replace way number, its own way number, the replace-later adjacent way number, and the at least one boundary way number as inputs.

23. (original)   The caching device in claim 22 in which the control unit generates the replacement order generator control signals to have the position selector for the last-to-replace position in the last-to-replace reference partition choose the hit way number, the position selectors from the hit position to the position next to the last-to-replace position in the last-to-replace reference partition choose the replace-later adjacent way number, and the position selectors for the remaining positions choose its own way number.

24. (original)   The caching device in claim 22 in which the control unit generates the replacement order generator control signals to have the position selector for the last-to-replace position in the last-to-replace reference partition choose the hit way number, the position selectors for the remaining positions in the last-to-replace reference partition choose the replace-later adjacent way number, the position selector for the last-to-replace position in the first-to-replace reference partition choose the boundary way number, the position selector from the hit position to the position next to the last-to-replace position in the first-to-replace reference partition choose the replace-later adjacent way number, and the position selectors for remaining positions in the first-to-replace reference partition and outside the reference partitions choose its own way number.

8

25.   (original)   The caching device in claim 22 in which the control unit generates the replacement order generator control signals to have the position selector for the last-to-replace position in the last-to-replace reference partition choose the replace way number, the position selector for the last-to-replace position in the first-to-replace reference partition choose the boundary way number, the position selectors for all other positions within the reference partitions choose the replace-later adjacent way number, and the position selectors for positions outside the reference partitions choose its own way number.

26.   (original)   The caching device in claim 22 in which the control unit generates the replacement order generator control signals to have the replace way selector choose the way number from the first-to-replace position in the first-to-replace reference partition.

27.   (original)   The caching device in claim 22 in which the control unit generates the replacement order generator control signals to have the replace way selector choose the way number from at least one position in the at least one replacement order list.

Please cancel claim 28.

28.   (cancelled)

29.   (currently amended)   ~~The caching device in claim 28 in which~~ A caching device using an N-way replacement mechanism comprising:

at least one replacement order list with N positions, the at least one replacement order list arranged with a first-to-replace position at one end and a last-to-replace position at the opposite end, each position containing a way number, N way comparators, a control unit, a replacement order generator, and receiving a hit signal and, in case of a hit, a hit way number;

a hit position in which the at least one replacement order list is determined by comparing the hit way number with the way number in each of the N positions in the at least one replacement order list using the N way comparators;

a control unit which produces replacement order generator control signals using the hit signal and the hit position;

a replacement order generator which comprises a replace way selector producing a replace way number and N position selectors, each consisting of a multiplexor with at least two inputs;

the at least one replacement order list has a lock register, indicating the positions in the at least one replacement order list that are locked, and the control unit receiving the value of the lock register; and

the at least one replacement order list is divided into unlocked and locked partitions, with the unlocked partition arranged with the first-to-replace position at one end and the last-to-replace position at the opposite end of the partition, and the lock register indicating the number of positions in the locked partition.

30.   (original)   The caching device in claim 29 in which the control unit generates the replacement order generator control signals to have the position selector in the last-to-replace

position in the unlocked partition choose the hit way number, the position selectors from the hit position to the position next to the last-to-replace position in the unlocked partition choose the replace-later adjacent way number and the position selectors in the remaining positions choose its own way number.

31. (original) The caching device in claim 29 in which the control unit generates the replacement order generator control signals to have the position selector in the last-to-replace position in the unlocked partition choose the replace way number, the position selectors in the remaining positions in the unlocked partition choose the replace-later adjacent way number and the position selectors in the locked partition choose its own way number.

32. (original) The caching device in claim 29 in which the number in the lock register is changed to the next higher value when a lock command is performed.

33. (original) The caching device in claim 29 in which the control unit generates the replacement order generator control signals to have the position selector in the first-to-replace position in the locked partition to choose the hit way number, the position selector in the hit position to choose the replace way number, which is from the first-to-replace position in the locked partition, and the position selectors in the remaining positions choose its own way, and the number in the lock register is changed to the next lower value.

34.   (original)   The caching device in claim 29 in which the control unit generates the replacement order generator control signals to have the position selector in the last-to-replace position in the at least one replacement order list choose the hit way number, the position selectors from the hit position to the position next to the last-to-replace position in the at least one replacement order list choose the replace-later adjacent way number, and the position selectors in the remaining positions choose its own way number, and the number in the lock register is changed to the next higher value.

35.   (original)   The caching device in claim 29 in which the control unit generates the replacement order generator control signals to have the position selector in the last-to-replace position in the at least one replacement order list choose the replace way number and the position selectors in the remaining positions in the at least one replacement order list choose the replace-later adjacent way number, and the number in the lock register is changed to the next higher value.

36.   (original)   The caching device in claim 29 in which the replace way selector always chooses the way number from the first-to-replace position in the unlocked partition.

37.   (original)   The caching device in claim 29 in which the control unit generates the replacement order generator control signals to have the replace way selector choose the way number from at least one position in the at least one replacement order list.

Please cancel claim 38.

38.   (cancelled)

39.   (currently amended)   The caching device in claims ~~4 or 38~~ 5 or 10 in which the control unit is implemented using random access memory or reprogrammable logic array.

40.   (currently amended)   The caching device in claims ~~4 or 38~~ 5 or 10 is an instruction cache.

41.   (currently amended)   The caching device in claims ~~4 or 38~~ 5 or 10 is a data cache.

42.   (currently amended)   The caching device in claims ~~4 or 38~~ 5 or 10 is a combined instruction and data cache.

43.   (currently amended)   The caching device in claims ~~4 or 38~~ 5 or 10 is an instruction TLB.

44.   (currently amended)   The caching device in claims ~~4 or 38~~ 5 or 10 is a data TLB.

45.   (currently amended)   The caching device in claims ~~4 or 38~~ 5 or 10 is a combined instruction and data TLB.

46. (currently amended) The caching device in claims ~~4 or 38~~ 5 or 10 is a texture map cache in a graphics system.

47. (currently amended) The caching device in claims ~~4 or 38~~ 5 or 10 is used in a single processor system.

48. (currently amended) The caching device in claims ~~4 or 38~~ 5 or 10 is used in a multiple processor system.

49. (currently amended) The caching device in claims ~~4 or 38~~ 5 or 10 is used in a multithreaded system.

Please cancel claims 50-51.

50. (cancelled)

51. (cancelled)

52. (currently amended) A data processing system adapted to include a caching device; the caching device comprising:

at least one replacement order list with N positions, the at least one replacement order list arranged with a first-to-replace position at one end and a last-to-replace position at the opposite end, each position containing a way number, N way comparators, a control unit, ~~The data~~

~~processing system in claim 51 in which~~ the control unit ~~is~~ being implemented using random access memory or reprogrammable logic array, a replacement order generator, and receiving a hit signal and, in case of a hit, a hit way number;

the replacement order generator consisting of N position selectors, each selector having the way number from each of the N positions as inputs.

53.	(currently amended)	A method for providing a replacement mechanism in a caching device comprising the steps of:

(a)	providing at least one replacement order list with N partitions; and

(b)	arranging the at least one replacement order list of each of the N partitions with a first to replace position at one end and a last to replace position at an opposite end, each position containing a way number, N way comparators, a control unit, and a replacement order generator.